

Amendments to the Claims

The listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

- 5 1. (currently amended) An optical drive system comprising:
 - an optical disc;
 - an object lens for focusing light on the optical disc;
 - a tilt servo for adjusting a tilt angle between the optical disc and the object lens;
- 10 an optical electric integrated circuit (OEIC) for detecting light reflected from the optical disc;
- a DPD generator for generating a differential phase detection (DPD) signal according to the output of the OEIC; and
- a tilt search block receiving the DPD signal and being connected to the tilt servo, wherein the tilt search block controls the tilt servo to adjust the tilt angle between the optical disc and the object lens according to the DPD signal, and when controlling the tilt servo to adjust the tilt angle between the optical disc and the object lens according to the DPD signal, the tilt search block controls the tilt angle to finding an optimal tilt angle, wherein the optimal tilt angle associates with having a lowest amplitude DPD signal.
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- 25 2. (original) The optical drive system of claim 1, wherein the tilt search block further comprises an amplifier for amplifying the DPD signal such that the amplified DPD signal corresponds to a maximum allowable input signal level for the tilt search block, and the tilt search block controls the tilt servo to adjust the tilt angle between the optical disc and the object lens according to the amplified DPD signal.
- 30 3. (original) The optical drive system of claim 1, wherein the tilt search block further comprises an analog to digital converter to convert the DPD signal to

a digital DPD signal, and the tilt search block controls the tilt servo to adjust the tilt angle between the optical disc and the object lens according to the digital DPD signal.

5 4. (cancelled)

5. (currently amended) The optical drive system of claim 1, wherein to control the tilt angle to [[find]] the optimal tilt angle ~~having the lowest amplitude DPD signal~~, the tilt search block controls the tilt servo to adjust the tilt angle to a first plurality of angles, measures the amplitudes of the DPD signals for the first plurality of angles, controls the tilt servo to adjust the tilt angle to a second plurality of angles centered at the angle having associated with the lowest amplitude DPD signal in the first plurality of angles, and measures the amplitudes of the DPD signals for the second plurality of angles to control the tilt angle to [[find]] the optimal tilt angle.

6. (original) The optical drive system of claim 5, wherein the angle spacing between the first plurality of angles is larger than the angle spacing between the second plurality of angles.

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7. (currently amended) The optical drive system of claim 1, wherein the tilt search block iteratively scans a plurality of angles, each plurality of angles having decreasing angle differences, until the tilt angle is controlled to the optimal tilt angle ~~having the lowest amplitude DPD signal is found~~.

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8. (currently amended) A method of calibrating the tilt angle between an optical disc and an object lens in an optical storage device, the method comprising the following steps:
providing a tilt servo for adjusting the tilt angle between the optical disc and
30 the object lens;
providing an optical electric integrated circuit (OEIC) for detecting light

reflected from the optical disc;
generating a differential phase detection (DPD) signal according to the
output of the OEIC;
controlling the tilt servo to adjust the tilt angle between the optical disc and
5 the object lens according to the DPD signal; and
when controlling the tilt servo to adjust the tilt angle between the optical
disc and the object lens according to the DPD signal, controlling the
tilt angle to finding an optimal tilt angle, wherein the optimal tilt angle
associates with having a lowest amplitude DPD signal.

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9. (original) The method of claim 8, further comprising amplifying the DPD
signal, and controlling the tilt servo to adjust the tilt angle between the
optical disc and the object lens according to the amplified DPD signal.

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10. (original) The method of claim 8, further comprising converting the DPD
signal to a digital DPD signal, and controlling the tilt servo to adjust the tilt
angle between the optical disc and the object lens according to the digital
DPD signal.

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11. (cancelled)

12. (currently amended) The method of claim 8, wherein controlling the tilt angle
to finding the optimal tilt angle ~~having the lowest amplitude DPD signal~~
comprises controlling the tilt servo to adjust the tilt angle to a first plurality
25 of angles, measuring the amplitudes of the DPD signals for the first plurality
of angles, controlling the tilt servo to adjust the tilt angle to a second
plurality of angles centered at the angle ~~having associated with~~ the lowest
amplitude DPD signal in the first plurality of angles, and measuring the
amplitudes of the DPD signals for the second plurality of angles to control
30 the tilt angle to [[find]] the optimal tilt angle.

13. (original) The method of claim 12, wherein the angle spacing between the first plurality of angles is larger than the angle spacing between the second plurality of angles.

5 14. (currently amended) The method of claim 13, wherein controlling the tilt angle to finding the optimal tilt angle having the lowest amplitude DPD signal comprises iteratively scanning a plurality of angles having decreasing angle differences until the tilt angle is controlled to the optimal tilt angle having the lowest amplitude DPD signal is found.

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15. (currently amended) The optical drive system of claim 1, wherein the tilt search block is further for controlling the tilt angle to finding the optimal tilt angle by comparing only different amplitudes of the DPD signal corresponding to different tilt angles, the optimal tilt angle having the lowest amplitude DPD signal.

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16. (previously presented) The optical drive system of claim 1, wherein the tilt search block is further for setting the tilt angle between the optical disc and the object lens to the optimal tilt angle.

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17. (currently amended) The method of claim 8, further comprising controlling the tilt angle to finding the optimal tilt angle by comparing only different amplitudes of the DPD signal corresponding to different tilt angles, the optimal tilt angle having the lowest amplitude DPD signal.

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18. (previously presented) The method of claim 8, further comprising setting the tilt angle between the optical disc and the object lens to the optimal tilt angle.

30 19. (previously presented) An optical drive system comprising:
an optical disc;

an object lens for focusing light on the optical disc;

5 a tilt servo for adjusting a tilt angle between the optical disc and the object lens;

an optical electric integrated circuit (OEIC) for detecting light reflected from the optical disc;

10 a DPD generator for generating a differential phase detection (DPD) signal according to the output of the OEIC; and

a tilt search block receiving the DPD signal and being connected to the tilt servo, wherein the tilt search block controls the tilt servo to adjust the tilt angle between the optical disc and the object lens according to only the DPD signal.

15 20. (previously presented) A method of calibrating the tilt angle between an optical disc and an object lens in an optical storage device, the method comprising:

providing a tilt servo for adjusting the tilt angle between the optical disc and the object lens;

providing an optical electric integrated circuit (OEIC) for detecting light reflected from the optical disc;

20 generating a differential phase detection (DPD) signal according to the output of the OEIC;

controlling the tilt servo to adjust the tilt angle between the optical disc and the object lens according to only the DPD signal.

25 21. (currently amended) An optical drive system comprising:

an optical disc;

an object lens for focusing light on the optical disc;

a tilt servo for adjusting a tilt angle between the optical disc and the object lens;

30 an optical electric integrated circuit (OEIC) for detecting light reflected from the optical disc;

a DPD generator for generating a differential phase detection (DPD) signal according to the output of the OEIC; and

a tilt search block receiving the DPD signal and being connected to the tilt servo, wherein the tilt search block controls the tilt servo to adjust the tilt angle between the optical disc and the object lens to a plurality of angles and then controls the tilt angle to [[finds]] a specific tilt angle selected from the plurality of angles according to the DPD signal.

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22. (currently amended) A method of calibrating a tilt angle between an optical disc and an object lens in an optical storage device, the method comprising:

10 providing a tilt servo for adjusting the tilt angle between the optical disc and the object lens;

providing an optical electric integrated circuit (OEIC) for detecting light reflected from the optical disc;

15 generating a differential phase detection (DPD) signal according to the output of the OEIC; and

controlling the tilt servo to adjust the tilt angle between the optical disc and the object lens to a plurality of angles, and then controlling the tilt angle to finding a specific tilt angle selected from the plurality of

20 angles according to the DPD signal.